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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/655,920	09/05/2003	Hassan Mostafavi	VM7031422001	8620

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EXAMINER	
LAURITZEN, AMANDA L	

ART UNIT	PAPER NUMBER
3737	

MAIL DATE	DELIVERY MODE
04/29/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/655,920	MOSTAFAVI, HASSAN	
	Examiner	Art Unit	
	A. LAURITZEN	3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29, 31-66* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29, 31-66* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3 April 2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

This action is in response to communications filed 4 January 2008. Amendments to the claims are not interpreted to introduce new matter.

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive and/or are moot in view of new grounds of rejection. Applicant asserts that method of Kaufman et al. does not require gating based on a composite image, but rather a projection image. Examiner disagrees and points out that the projection image(s) of Kaufman et al. are in fact composite images (col. 9, line 17) and that radiation therapy (a medical procedure) is controlled (gated) in response to the composite image (col. 8, lines 15-25). It is additionally disclosed that gating is performed from data obtained from the images themselves (col. 14, lines 60-62).

Regarding Takeo, subtraction methods are analogous to those claimed by applicant for determining a composite image, with clear correspondence to the depending claims.

Regarding claims 24-66, a new reference, Fitzgerald (US 2005/0027196) is applied in view of amendments to independent claims 24, 34 and 40 further characterizing the template.

Regarding claims 49, 55 and 58, Kaufman et al. teach selecting a region of the image with the brightest pixel intensity in each of the slices prior to calcium scoring and/or radiation therapy (col. 8, lines 30-33). This is analogous to gating a medical procedure based on a position of the target region, with the position of the target region being that as indicated by the location of the bright pixels (i.e., "the target region") in the image(s).

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman et al. (US 7,006,862) in view of Takeo (US 6,125,166).

Kaufman discloses a system and associated method in which radiation therapy is gated by an ECG signal, that involves at least first and second real-time images and forming a composite image with thresholding pixel (contrast) values in the activation/deactivation of a therapeutic radiation (abstract; Fig. 16; col. 5; col. 14; col. 20, lines 16-23; col. 3, lines 32-45; col. 8, lines 8-14; col. 13, lines 24-33; col. 2, lines 57-64; col. 9, lines 10-17; inter alia). Kaufman et al. do not expressly teach conducting a subtraction operation among images, but where Kaufman is deficient, Takeo et al. establish what is conventional within the skill of the art. Takeo et al. discloses a method of forming energy subtraction images and discloses using contrast values to determine threshold values (col. 1, lines 50-64 for the subtraction process; also col. 19, lines 11-28 in which a contrast value is used). It would have been obvious to use a contrast value of the image for reference as taught by Takeo in the system of Kaufman et al. for determining a threshold value in the gating of a procedure, as contrast image data allows for extraction of a

specific image structure that would be receiving treatment (for motivation, see Takeo at col. 2, lines 23-24).

2. Claims 24-29, 32, 33, 34-39 and 40-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman et al. in view of Takeo, as applied in section 1 above, further in view of Fitzgerald (US 2005/0027196).

Kaufman et al. as appended by Takeo includes all features of the invention as substantially claimed, including enhancing a moving object except for providing templates that include both image and radiation treatment data. In the same field of endeavor, Fitzgerald teach where Kaufman and Takeo are deficient – specifically providing templates, records or what is generally known as a radiation treatment plan that prescribes imaging information and information related to radiation therapy [0012], [0023]. It would have been obvious to one of ordinary skill in the art at the time of invention to provide templates specific to both the imaging and radiation therapy protocol for the purpose of planning guided treatment, as taught by Fitzgerald.

3. Claims 49-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman et al. in view of Takeo, as applied in section 1 above, further in view of Verard et al. (US 2004/0097805).

Kaufman et al. as appended by Takeo includes all features of the invention as substantially claimed, including enhancing a moving object except for providing templates that include both image and treatment data. In the same field of endeavor, Verard et al. disclose registration images with templates (para. 112 and para. 132 in which templates provide treatment data that includes lead placement and para. 146 for templates that provide therapy effective

zones). It would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated template registration as taught by Verard et al. with the system of Riaziat et al. in order to optimize the procedure (for motivation, see Verard para. 146). Takeo et al. teach image averaging for the purpose of smoothing an image (col. 13, lines 36-46). It would have been obvious to incorporate image averaging as taught by Takeo with the modified system of Riaziat in order to smooth images in the sequence. Features in the depending claims are clearly taught in the references applied or are considered to be obvious within the skill of the art.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. LAURITZEN whose telephone number is (571)272-4303. The examiner can normally be reached on Monday - Friday, 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. L./
Examiner, Art Unit 3737

A. LAURITZEN
Examiner
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/Brian L Casler/
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